

## CLAIMS

What is claimed:

1. A system to dynamically control the rate of change of the DC current through a load circuit and/or the DC voltage across a load circuit, with respect to time, during the initial power up phase and during successive power up, power down, and power up cycles comprising:
  - a digital sequencing means for the initiation of a digital sequence and whereby the digital sequence either increments or decrements, as required, at a given time interval;
  - a drive circuit means for the conversion of the digital sequence to an analog voltage level;
  - a current control means for the control of the current through a load circuit.
2. The system to dynamically control the rate of change of the DC current through a load circuit and/or the DC voltage across a load circuit, with respect to time, according to claim 1 further comprising a means to store the digital sequence and the time interval that the digital sequence either increments or decrement, furthermore where the time interval between when the digital sequence either increments or decrements can be of one value for  $t = 0$  to  $t = 1$ , a second value at  $t = 1$  to  $t = 2$ , and a third value at  $t = 2$  to  $t = 3$ .
3. The system to dynamically control the rate of change of the DC current through a load circuit and/or the DC voltage across a load circuit, with respect to time, according to claim 2 further comprising a current measurement means and/or a voltage measurement means and whereby the current measurement means and/or the voltage measurement means activates a fault indication means if the current level and/or the voltage level is either greater than or less than the programmed current and/or the programmed voltage level.

4. The system to dynamically control the rate of change of the DC current through a load circuit and/or the DC voltage across a load circuit, with respect to time, according to claim 3 further comprising a switching means to isolate the DC power supply from the load circuit whereby the switching means serves to delay the application of the DC current/voltage from the DC power supply to the load circuit for the initialization of the system to dynamically control the rate of change of the DC current through a load circuit and/or the DC voltage across a load circuit, with respect to time.
5. The system to dynamically control the rate of change of the DC voltage across a load circuit with respect to time according to claim 4 further comprising a programming means to interactively establish the maximum DC current through a load circuit and/or the DC voltage across a load circuit.
6. A circuit to directly interface from a low output power device to a device, which requires a high input control current comprising:  
a control means consisting of a metal oxide semiconductor field effect transistor, whereby the low output power device connects to the gate of said transistor and whereby said transistor serves as a high input impedance buffer between the low output power device and the device which requires a high input control current, furthermore where a means for the input control current of the high input control current device is provided by means of the drain source channel of said transistor to ground;  
a current/voltage bias control means consisting of a resistor located between either a positive or negative DC current/voltage source and the drain of the metal oxide semiconductor field effect transistor;

a high input control current power device consisting of a bipolar junction transistor, whereby the base of said transistor is connected between the current/voltage bias resistor and the drain of the metal oxide semiconductor field effect transistor whereby said transistor provides the input control current for the bipolar junction transistor by means of the drain source channel of said transistor to ground, furthermore, where either the positive or negative current/voltage source that is connected to the current/voltage bias control means is also connected to the emitter of the bipolar junction transistor and whereby the load is connected to the collector of the bipolar junction transistor.